

OBSTACLES TO ADOPTING A HEALTHY LIFESTYLE AMONG PEOPLE OVER 60 YEARS OLD IN MAKKAH, SAUDI ARABIA

HATIM A. NATTO¹, WAHAJ A. KHAN^{2*}, HATIM MATOOQ BADRI², ALBARAA MILIBARI², MOHAMED OSMAN ELAMIN BUSHARA², RAHAF ADNAN ALHAZMI³, RAGHAD ABDULHAMID HADIDI³, HAYA SAAD ALBISHI³, SHOQ ALI ALMONTASHIRI³, AHDAB SALEH ALHARBI³ AND AHMED A. OSMAN⁴

¹Epidemiology Department, College of Public Health and Health Informatics, Umm Al-Qura University, Makkah, Saudi Arabia

²Environmental and occupational Health Department, College of Public Health and Health Informatics, Umm Al-Qura University, Makkah, Saudi Arabia

³Health Education and Health Promotion department, College of Public Health and Health Informatics, Makkah, Saudi Arabia

⁴Department of Medicine, College of Medicine, Kassala University, Khartoum, Sudan

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ABSTRACT

Background: Several behavioral factors are considered to be obstacles to adopting a healthy life for those over 60 years of age; such factors have strong associations with mortality related chronic illnesses, physical inactivity, bad eating habits, and sleeping disorders. **Objective:** This study aimed to identify the population specific factors that affect adopting a healthy lifestyle for the elderly in Makkah, Saudi Arabia. Furthermore, this study aimed to identify possible ways to encourage the elderly into adopting a healthy life. **Methods:** This is a cross-sectional community-based study. Elderly Saudi citizens aging 60 years old and above were targeted. A non-random (quota sampling) sampling technique was used to recruit 330 participants. Data were collected via a structured questionnaire. **Results:** The Majority of participant (70 %) were in the age group of 60-66 years. Many of which (40 %) reported hypertension as the most common chronic disorder affecting them. Moreover, near half of the participants did not participate in any form of physical exercise. Additionally, fatigue was reported as the major obstacle (29%) that prevented participants from regular exercise. **Conclusion:** Two probable factors preventing the elderlies from adopting a healthy lifestyle were identified namely fatigue which kept older people from engaging in regular exercise and sleeping disorders which probably had an impact on overall physical health which eventually could affect their ability to participate in physical exercise.

KEY WORDS: Obstacles to Adopting

INTRODUCTION

Life tends to change significantly with the aging process. As people age, they go through physical changes, career changes, retirement, and loss of loved ones. A proper understanding of such changes and how to deal with them is a must to stay healthy (Saudi Ministry of Health 2021). The World Health Organization (WHO) estimated that 4.3% of the population in the Kingdom of Saudi Arabia (KSA)

are within the age group ranging between 55 and 64 years. Also, they predicted an increase in this age group in the upcoming years (Hou *et al.*, 2020). The elderly has been generally defined as those who are aged 65 years or older. Those who are aged 65 to 74 years and those who are over 75 years old are referred to as “early elderly” and as “late elderly” respectively. Several behavioral factors are considered obstacles to adopting a healthy life for those over 60 years of age. Such factors include

(¹Assistant Professor)

physical inactivity, bad eating habits, and sleeping disorders. Moreover, they have strong associations with increased mortality and chronic illnesses. For example, people who don't eat breakfast regularly and have a low level of physical activity, have a similar mortality rate as smokers (Kaplan, 2011). Individual factors that affect the health of the elderly include personal habits and behaviors, changes related to aging, and history of diseases, whereas environmental factors include home environment and transportation. There are common diseases affecting elderly people such as diabetes, high blood pressure, osteoporosis, poor eyesight, poor hearing, cancer, heart diseases, arthritis, loss of balance, gait disturbance, difficulty or lack of movement, impaired sense of taste, reduced ability of the stomach and intestine to digest and absorb food, constipation, dementia, Alzheimer, depression, delirium, and sleep disturbance (Saudi Ministry of Health, 2021). In order to achieve the goal of healthy aging or active aging, several factors are needed. These factors include participating in regular exercise groups and social activities, adhering to a healthy diet, getting adequate sleep and good sleep hygiene, and taking vacations (Siamak and Nabili, 2017). People aged 65 or over should be engaged in at least 150 minutes of moderate physical activity distributed throughout the week, or 75 minutes of intense physical activity distributed throughout the week (World Health Organization, 2011). Walking or cycling is examples of some physical activities that the elderly prefer. They may help improve cardio respiratory and muscular fitness, functional and bone health, and reduce the risk of chronic diseases, depression, and cognitive decline (World Health Organization 2011). With the aging process, sleep patterns tend to change with lower total sleep time and lower sleep quality. Changes in sleep patterns may be a part of the normal aging process. It usually puts elderly people at a higher risk of developing sleep disorders such as insomnia, excessive daytime sleepiness, restless legs syndrome, narcolepsy, or hypersomnia, and sleep apnea (Glen and Xiong, 2020). A healthy and adequate diet in elderly individuals decreases by age or social deprivation, depression, and loneliness. This is usually due to somatic, psychic, or social problems (Pirlich and Lochs, 2002). Malnutrition is an independent risk factor for an increase in morbidity and mortality rates. Factors that contribute to malnutrition are a combination of physical, social, and psychological problems such as reduced appetite, difficulty

chewing or swallowing, poor dental health, and lack of movement (Mayo Clinic Health of Elderly, 2019). There are several obstacles facing the elderly such as mobility difficulties, access to healthcare services, sleep disturbances, lack of physical activity, and age-related weakness (<https://www.smithlifelifehomecare.com/what-are-the-biggest-challenges-for-elderly-people-in-our-society>, 2020). Globally, the number of obstacles to adopting a healthy lifestyle for the elderly is increasing; over 20% of the elderly suffer from mental or neurological disorders and 6.6% of all disabilities among elderly people are attributed to mental and neurological disorders. These disorders in older people account for 17.4% of Years Lived with Disability (YLDs). The most common mental and neurological disorders in this age group are dementia and depression, which affect approximately 5% and 7% of the world's older population. Anxiety disorders affect 3.8% of the older population, substance use problems affect almost 1%, and around a quarter of deaths from self-harm are among elderly people. It is estimated that 50 million people worldwide are living with dementia, with nearly 60% living in low and middle-income countries. The total number of people with dementia is projected to increase to 82 million in 2030 and 152 million in 2050 (<https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults>, 2017). In KSA, the demographic features of the population are changing and tend to follow the global increase in the aging population. This is mainly due to an increase in life expectancy, high birth rates in the last four decades, and a recent decline in fertility rates. The life expectancy has improved from 64.4/years in the 1980s to 74.3/years in the 2000s. As a result of these changes, the elderly population is predicted to increase to 9.5% and 18.4% in 2035 and 2050 (Khoja *et al.*, 2017). An increase in the elderly population calls for more healthcare expenses, which causes further economic burden. Efforts to overcome the obstacles facing elderly people may reduce healthcare expenses by reducing chronic illnesses and improving their quality of life. Up to our knowledge, there are few studies conducted about the adoption of a healthy lifestyle in elderly people in KSA. Given the importance of identifying the population specific factors that affect adopting a healthy lifestyle for the elderly in Makkah, Saudi Arabia, this study aims to shed light on the several health problems that can be easily avoided with enough effort and enough attention paid to them through adopting a healthier

lifestyle for the elderly. Moreover, it sheds light on overcoming all obstacles facing elderly people in Makkah which may contribute to better health outcomes, one of the main pillars of the KSA 2030 vision.

METHOD

Across-sectional study design was used. The inclusion criteria included any elderly Saudi citizen, males or and females, aged 60 and above living in Makkah, Saudi Arabia, and accepted to participate in the study. We excluded any participants less than 60 years old and participants who were not responded or accepted to participate in the study. A total of 384 participants were invited by using a non-random (quota) sampling technique and the respondents were 330, which yield a response rate of 86%. Data was collected from participants or their caregivers via an online questionnaire sent to the participants who met the inclusion criteria and agreed to participate. The questionnaire included questions about the demographic features (gender, age, place of residence), health condition, healthy lifestyle state, assessment of their awareness about living a healthy life, and the obstacles and barriers to adopting a healthy life.

Ethical Considerations

The approval to conduct this study was obtained from the Faculty of Public Health and Health Informatics, Umm Al-Qurra University, Saudi Arabia. The participants' written consent was obtained prior to enrolment in the study and before

responding to the questionnaires.

Statistical analysis

Data analysis was performed using SPSS version 21 (IBM Corp, Armonk, NY, USA). Distributions were summarized using descriptive statistics and are presented as frequencies. Categorical variables are summarized as frequencies and proportions.

RESULTS

The majority of participants (45 %) were at the age of 64. The mean age of the sample was 65.50 years with a standard deviation of 14.97 years (Figure 1).

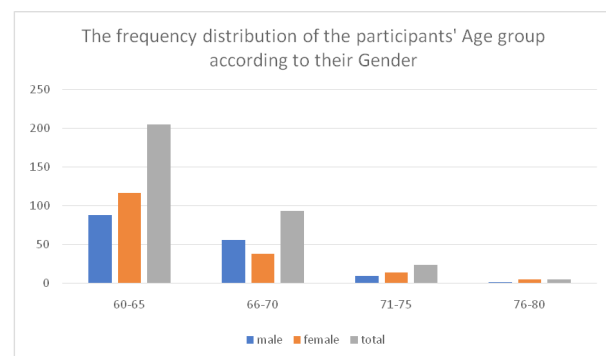


Fig. 1. Age distribution of the sample according to the gender (N= 330).

The majority of participants (40 %) had hypertension as the most common chronic disorder, while the least reported chronic disorders were gastrointestinal cancer, aortic regurgitation, gout, scleroderma, and kidney failure (Table 1).

Table 1. The frequency distribution of the participants' chronic diseases, according to their gender (N=330).

Participants' Chronic diseases	Gender		Total
	Male	Female	
Hypertension	68 (51.52%)	64 (48.48%)	132 (40%)
Diabetes	51 (47.22%)	57 (52.79%)	108 (32.7%)
Asthma	10 (52.63%)	9 (47.37%)	19 (5.8%)
Rheumatism	2 (28.57%)	5 (71.43%)	7 (2.1%)
Heart Disease	2 (40%)	3 (60%)	5 (1.5%)
Anemia	0 (0%)	4 (100%)	4 (1.2%)
High Blood Cholesterol	2 (50%)	2 (50%)	4 (1.2%)
Gastrointestinal Cancer	0 (0%)	1 (100%)	1 (0.3%)
Aortic Regurgitation	0 (0%)	1 (100%)	1 (0.3%)
Gout	1 (50%)	1 (50%)	2 (0.6%)
Scleroderma	0 (0%)	1 (100%)	1 (0.3%)
Kidney Failure	0 (0%)	1 (100%)	1 (0.3%)
Joint Roughness Coefficient	0 (0%)	3 (100%)	3 (1%)
Nothing	20 (47.62%)	22 (52.38%)	42 (12.7%)
Total	156 (47.27%)	174 (52.73%)	330 (100%)

Most of the participants (64.2%) were well informed about the concept of “Mean of living a healthy life” as found in their responses to the questions (Table 2).

The majority of participants (74.8%) were found to be non-smokers. Most participants (70 %) were found to be having 6 – 9 hours of sleep whereas some were found to be having 3 - 4 hours of sleep (21 %) and the rest (8.2%) were found to be having more than 10 hours of sleep (Table 3).

The majority of participants (49 %) reported lack of exercise, 29 % reported to exercise once a week, 12 % reported to exercise twice a week, and only 9 % reported to exercise daily (Table 4).

Most participants (80%) reported walking to be the easiest exercise to perform while 17 % reported to perform an exercise for the arms and legs and only 2 % of the participants reported to use the stairs as an exercise (Table 5).

In regard to obstacles to exercise, 29 % of participants reported fatigue, 26 % reported time, 22 % reported lack of place, and 22 % reported sickness/disease (Table 6).

The majority of participants (13 %) reported time and environment as the major obstacles that makes it difficult to adopt a healthy life while the least reported (0.6 %) was unavailability of transportation (Table 7).

Table 2. The frequency distribution of knowledge of the Meaning of living a healthy life according to their gender (N=300).

Mean of living a healthy life	Gender		Total
	Male	Female	
Living healthy*	99 (46.70%)	113 (53.30%)	212 (64.2%)
life free from diseases	43 (45.26%)	52 (54.74%)	95 (28.8%)
Lives in richness and luxury	14 (60.87%)	9 (39.13%)	23 (7%)
Total	156 (47.27%)	174 (52.73%)	330 (100%)

*Living healthy is not just the absence of disease; it is a state of complete physical, mental, and social well-being.

Table 3. The frequency distribution of sleep hours, according to gender (N=300).

Sleep hours	Gender		Total
	Male	Female	
3-4 hours	31 (71.08%)	39 (28.91%)	70 (21.2%)
6-9hours	112 (39.27%)	121 (60.73%)	233 (70.6%)
10 hours and more	13 (39.27%)	14 (60.73%)	27 (8.2%)
Total	156 (47.27%)	174 (52.73%)	330 (100%)

Table 4. The frequency distribution of rate of exercise per week, according to their gender (N=300).

The rate of exercise per week	Gender		Total
	Male	Female	
once a week	46 (47.92%)	50 (52.08%)	96 (29.1%)
(2-3)/week	20 (48.78%)	21 (51.22%)	41 (12.4%)
Daily exercise	11 (35.48%)	20 (64.52%)	31 (9.4%)
Lack of exercise	79 (48.77%)	83 (51.23%)	162 (49.1%)
Total	156 (47.27%)	174 (52.73%)	330 (100%)

Table 5. The frequency distribution of easiest exercise, according to their gender (N=300).

The easiest exercise	Gender		Total
	Male	Female	
Walk	124 (46.97%)	140 (53.03%)	264 (80%)
Go up and down the stairs	3 (37.5%)	5 (62.6%)	8 (2.4%)
Exercises for arms and legs	29 (50%)	29 (50%)	58 (17.6%)
Total	156 (47.27%)	174 (52.73%)	330 (100%)

The majority of the participants in all age groups reported "lack of exercise". In the age group of 60 – 65 years, the rate was 48 %. In the age group of 66 – 70, the rate was 50 %. In the age group of 71 -75 years the rate was 54 %. In the age group of 76 -80 years, the rate was 42 % (Table 8).

In the age group of 60 – 65 years, the majority of participants (87 %) reported walking as the easiest exercise to perform. In the age group of 66 -70 years, walking was also the easiest exercise to perform with 71 %. Also, walking was the easiest exercise to perform among the age groups of 71 - 75 and 76 - 80

years with 63 % and 43 %, respectively (Table 9).

The majority (37 %) of participants reported fatigue as an obstacle to performing exercises among the age group 60 - 65 years with lack of places for exercise was the most reported obstacle (51 %) to performing exercise in 66 - 70 years. About 37 % of the participants in the age group of 71- 75 years reported fatigue as an obstacle to performing exercise. Among the age group of 76 -80 years, 4 % reported disease as the most obstacle to performing exercise (Table 10).

Table 6. The frequency distribution of Obstacles to exercises, according to their gender (N=300).

Obstacles to exercises	Gender		Total
	Male	Female	
Physical fatigue	41 (42.71%)	55 (57.29%)	96 (29%)
Time	40 (45.45%)	48 (54.44%)	88 (26.6%)
Diseases	44 (61.11%)	28 (38.89%)	72 (22%)
The lack of places for exercises	31 (41.89%)	43 (58.11%)	74 (22.4%)
Total	156 (47.27%)	174 (52.73%)	330 (100%)

Table 7. The frequency distribution of participation of the obstacles that make it difficult for you to adopt a healthy life, according to their gender (N=300).

The obstacles to adopt a healthy life	Gender of participant		Total
	Female	Male	
Time	43 (13%)	22(51.16%)	21 (48.84%)
Growing old	32 (9.7%)	10(31.25%)	22 (68.75%)
Diseases	33 (10%)	11 (33.33%)	22 (66.67%)
Income	29 (8.8%)	14 (48.28%)	15 (51.72%)
Lack of commitment	14 (4.2%)	7 (50%)	7 (50%)
Environment	43 (13%)	23 (53.49%)	20 (46.51%)
Cultures	14 (4.2%)	6 (42.86%)	8 (57.14%)
Daily habits	17 (5.2%)	10 (58.82%)	7 (41.18%)
Lack of awareness	19 (5.8%)	10 (52.63%)	9 (47.37%)
Physical fatigue	14 (4.2%)	9 (64.29%)	5 (35.71%)
Nutrition	14 (4.2%)	10 (71.43%)	4 (28.57%)
Sense of weakness	21 (6.4%)	12 (57.14%)	9 (42.86)
Resource	17 (5.2%)	13 (76.47%)	4 (23.53%)
Unavailability of transportation.	2 (0.6%)	2 (100%)	0
Unknow	18 (5.5%)	15 (83.33%)	3 (16.67%)
Total	330 (100%)	174 (52.73%)	156 (47.27%)

Table 8. The frequency distribution of relationship between the rate of daily exercise and Age group (N=300).

Age Group	The rate of exercise per week				Total
	Once a week	(2-3)/ week	Daily exercise	Lack of exercise	
60-65 years	61 (29.8%)	22 (10.7%)	23 (11.22%)	99 (48.3%)	205 (62.1%)
66-70 years	27 (28.7%)	13 (13.8%)	7 (7,45%)	47(50%)	94 (28.5%)
71-75 years	6 (25%)	4 (16.7%)	1 (4.17%)	13 (54.1%)	24 (7.3%)
76-80 years	2 (28.6%)	2 (28.6%)	0	3 (42.9%)	7 (2.1%)
Total	96 (29%)	41 (12.4%)	31 (9.39%)	162 (49.1%)	330 (100%)

DISCUSSION

This study was conducted using a digital questionnaire, the majority of participants were found to be females, and the most prevalent chronic illness was found to be hypertension. Most participants knew the proper definition of a healthy life style; the majority of participants were found to be non-smokers. As for exercise, most participants never performed any kind of regular exercise and only few of them exercised once a week. The most common exercise was walking due to physical exhaustion, lack of time, or places designated for other sports. A relatively high percentage of participants in this study were found to be suffering from chronic diseases such as hypertension and diabetes. Chronic diseases are considered obstacles to adopting a healthy life style among the elderly as the prevalence of high blood pressure increases with age (Ministry of Health, (n.d); According to the Ministry of Health, the rate of high blood pressure in the Kingdom of Saudi Arabia is 70% compared to a study conducted in Vietnam, 15% (Ministry of Health, (n.d); Denton *et al.*, 1970). The majority of participants in this study slept between 6 to 9 hours. Only about 8% slept more than 10 hours, a sleep rate that is similar of those who suffer from chronic diseases such as diabetes, high blood pressure, and asthma (Ahmed *et al.*, 2017). A study conducted in Riyadh in 2014 found that 25% of their participants who slept more than 9 hours were suffering from

chronic diseases (Ahmed *et al.*, 2017). Also, a study conducted in the United States in 2014 found that 23.8% of those who suffered from chronic diseases such as asthma, heart conditions, and diabetes slept more than 8 hours (https://www.cdc.gov/sleep/data_statistics.html, 2017). It is important to sleep enough, especially for the elderly, as sleep is crucial for their health. Having the required sleeping hours has many benefits for the elderly; it improves their focus, memory functions and reduces the risk of diseases (<https://www.asbury.org/blog/sleep-benefits-for-seniors>, 2020). The recommended amount of sleep for the elderly is between 7-8 hours per night in order to feel rested with optimal sleep quality (Ahmed *et al.*, 2017). Short sleep durations are common in older adults; they often tend to sleep less due to sleep disturbances such as insomnia or disturbed breathing during sleep, such as snoring and sleep apnea, or movement disorders, such as restless legs syndrome (<https://www.fosters.com/article/20100517/gjcommunity02/705179999>, 2010). In addition, about 20% of participants in this study slept less than 4 hours per night, which is less than the optimal/required sleep hours. Sleep restriction may cause memory issues, disturbed mood, increase the risk of chronic illnesses (Reynolds *et al.*, 2021; Scullin and Bliwise, 2015; Koyanagi *et al.*, 2014). There is a significant relationship between sleep and chronic diseases in elderlies. Various studies have shown that sleep deprivation may be a significant contributor to the burden of many chronic illnesses

Table 9. The frequency distribution of relationship between the rate of walk exercise and Age group (N=300).

Age Group	The easiest exercise			Total
	Walking	Go up and down the stairs	Exercises for arms and legs	
60-65 years	179 (87.32%)	1 (0.49%)	25 (12.20%)	205 (62.1%)
66-70 years	67 (71.28%)	4 (4.26%)	23 (24.47%)	94 (28.5%)
71-75 years	15 (62.5%)	2 (8.34%)	7 (29.17%)	24 (7.3%)
76-80 years	3 (42.86%)	1 (14.29%)	3 (42.86%)	7 (2.1%)
Total	264 (80%)	8 (2.42%)	58 (17.58%)	330(100%)

Table 10. The relationship between the Obstacles to exercises and age group (N=300).

Age Group	Obstacles to exercises				Total
	Physical fatigue	Time	Diseases	The lack of places for exercises	
60-65 years	77 (37.6%)	64 (31.2%)	44 (21.5%)	20 (9.8%)	205 (62.1%)
66-70 years	9 (9.6%)	20 (21.3%)	17 (18.1%)	48 (51.1%)	94 (28.5%)
71-75 years	9 (37.5%)	3 (12.5%)	7 (29.2%)	5 (20.8%)	24 (7.3%)
76-80 years	1 (14.2%)	1 (14.3%)	4 (57.1%)	1 (14.3%)	7 (2.1%)
Total	96 (29%)	88 (26.7%)	72 (21.8%)	74 (22.4%)	330 (100%)

such as hypertension, diabetes, obesity, cancer, and cardiovascular diseases (Von Ruesten *et al.*, 2012; Grandner *et al.*, 2016). Most participants in this study reported living a sedentary lifestyle. Previous studies, including one in Saudi Arabia in 2017 and another in the USA in 2016, showed that elderlies were not engaging in regular exercise with 58.5% and 26.9%, respectively (Alahmed and Lobelo, 2017; <https://www.cdc.gov/mmwr/volumes/65/wr/mm6536a3.htm>, 2021). Potential reasons for not exercising may be lack of coordination and balance, reduced joint flexibility and mobility, reduced cardiovascular and respiratory function, reduced bone strength, and high blood pressure (Department of Health & Human Services, 2012). Regular exercise is associated with a decreased chance of death and/or disability from diseases such as cardiovascular disease, diabetes, arthritis, and lung disease; also, it is associated with positive psychological benefits such as reduced depression and improved quality of life (https://www.todaygeriatricmedicine.com/news/ex_092210_03.shtml, 2021). It is important to know how much and what type of exercise older adults should participate in per week based on their age, medical or chronic health conditions (https://www.todaygeriatricmedicine.com/news/ex_092210_03.shtml, 2021). Older adults are advised to get 150 minutes of exercise per week or 75 minutes spread over the week (WHO, 2011). They should engage in physical activity at least 3 times a week to promote balance and prevent falls (WHO, 2011). Most of the participants wanted Nutritional counseling via communication networks (online) because of easy access to information about a healthy diet. Since healthy eating is important for the elderly, as aging is a risk factor for many chronic conditions such as high blood pressure and diabetes, healthy eating may help reduce the risk of chronic diseases and contribute to vitality, daily activities, energy, mood, etc. (Health.gov.il. 2021). Studies showed that nutrition plays an important role in health, and both undernutrition and overnutrition are associated with greater risks of disease and death. Most of the participants had obstacles that made it difficult to adopt a healthy lifestyle. Lack of time among the elderly can lead to an unhealthy lifestyle such as a lack of exercise and irregular visits health check-ups. As people age, they face major changes in their life. Although it appears gradually, it is important to understand that it may create obstacles, and the elderly must face and overcome these obstacles to adopt a healthy life. Physical

activity decreases in the elderly due to lack of time, chronic diseases, or health problems such as bone and muscle diseases, but mostly it is due to a lack of awareness of the importance of physical activity (Hollmann *et al.*, 2007). According to a research study conducted by Jamie S. McPhee about physical activity in older individuals: perspectives for healthy aging and frailty in the UK in 2016, emphasizes that despite the stated benefits of physical activity, the vast majority of elderly people in the UK do not meet the minimum levels of physical activity necessary to maintain health (McPhee *et al.*, 2016). The sedentary lifestyles that predominate in the aging population lead to the early onset of chronic diseases and weakness (McPhee *et al.*, 2016). Physical fatigue was the most common cause that prevented participants in this study from engaging in exercise. Many diseases are associated with physical inactivity and lack of exercise, such as cardiovascular disease, weakening of the immune system, loss of the ability to concentrate, and memory loss (Hollmann *et al.*, 2007). There are certain types of exercise are more suitable for them, such as swimming, walking, and muscle-strengthening (resistance) exercises (<https://www.nia.nih.gov/health/four-types-exercise-can-improve-your-health-and-physical-ability>, 2021). Perhaps aerobic exercises are the easiest for the elderly, and walking was the choice of the majority of participants in this study (80%). Walking has many benefits, such as reducing blood pressure and cholesterol and assisting in losing or maintaining weight (Human Services, 2015). Based on research conducted by Hiroyuki Noda in 2005, men and women who reported having a regular physical activity (i.e., walking ≥ 1 h/day or doing sports ≥ 5 h/week) had a 20% to 60% lower age-adjusted risk of mortality from cardiovascular diseases (Noda *et al.*, 2005).

There are two major limitations in this study that could be addressed in future research. First, although this research is considered one of few that investigated the quality of life for elderly people in Saudi Arabia, the lack of previous studies on the topic has limited the ability to compare the results found. Second, causation could not be reached due to the study design used (cross-sectional). Third, with regards to the age groups, the rate of exercise, the easiest of exercises, and the obstacles to exercise presented in Tables 6 and 10, the variation in participants within the groups may represent a technical limitation, causing an overestimation or

underestimation in some figures within the groups.

To conclude, according to the findings reported here, fatigue was one of the major factors that kept elderly people from engaging in regular exercise. About half of participants were not engaging in any kind of regular exercise. About a third of participants slept either less or more than the optimal/required time for their age, which may lead to many chronic health issues, especially at their age. The majority of participants in selected walking as their most favorite exercise. We recommend elderly specified educational programs in Saudi Arabia which targets sleep, well-being, and physical activity.

Conflict of interest: the authors declare no conflict of interest, the manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met, and that each author believes that the manuscript represents honest work.

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